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World Fishing Fleets

An Analysis of Distant-water Fleet Operations

Past - Present - Future

Volume I

Executive Summary

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APR 05 1994

National Marine Fisheries Service
2570 Dole Street
Honolulu, Hawaii

NATIONAL MARINE FISHERIES SERVICE
National Oceanic and Atmospheric Administration
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National Marine Fisheries Service
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Prepared by
The Office of International Affairs

Frederick H. Beaudry
William B. Folsom

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STATISTICAL NOTE

Statistics prepared by international organizations and governments vary in their reliability from excellent to poor and, in some instances, non-existent. Different reporting methods and time frames can produce minor variations between different sources that complicate meaningful comparisons. Some countries collect data on powered vessels only; some include non-powered fishing vessels in their statistics. Other nations report only vessels over a certain tonnage while still others include only "decked" vessels (i.e., those with a deck as opposed to open rowboats without a deck). Countries also change their reporting methods or periodically update their data for previous years. **The authors recognize that different numbers have been, or can be, cited for the same country's fleet for the same year.** This report attempts to overcome the problem by using a single source (Lloyd's Register of Shipping) and supplementing the information with other reliable sources as available.

EMPHASIS ON HIGH-SEAS FLEET

The authors have decided for the purposes of this study to define **high-seas fishing vessels as vessels of 500-gross registered tons or more**. The authors decided to use this definition for analytical simplicity. Existing data sets, such as those provided by *Lloyd's*, give worldwide fleet statistics based on the size, but not the deployment of vessels. The authors have had to rely on such data sets because compiling comprehensive world-wide statistics from national statistical reports was beyond the resources available for this study. The authors recognize, however, that small coastal vessels can be shifted from one country to another. Many countries deploy vessels smaller than 500-GRT on the high-seas. The authors, for example, were faced with the problem of not using statistics which identified high-seas vessels in the 100- to 499-GRT range, because these vessels were below the 500-GRT cutoff point. Alternatively, some countries deploy vessels larger than 500-GRT in coastal fisheries. The authors believe that focusing on vessels of 500-GRT or more, from one respected source, provided an excellent picture of basic **trends**.

We have used the term "high-seas vessel" to identify vessels over 500-GRT that fish beyond 200-mile Exclusive Economic Zones. As indicated above, there are many vessels in the 100-GRT to 499-GRT class that fish on the high-seas or that fish thousands of miles from their homeports. In many cases we used the term "distant-water" to identify fishing grounds far from homeports of various countries. There are a few instances where the terms may overlap: vessels under 500-GRT fishing far beyond 200-miles and vessels over 2,000-GRT fishing close to shore. The authors have attempted to differentiate between "high-seas" and "distant-water" fisheries as much as possible, but there were a few cases where the authors simply did not have sufficient information about certain vessels or fisheries.

A WORD ABOUT REFLAGGING

Reflagging, registering a vessel in another country, is a growing concern for fishery managers around the world. Reflagging is done for many reasons. The simplest case is a vessel owner in one country selling a vessel to a new owner in a different country. In other cases, local requirements may require all joint venture fisheries' vessels to fly the flag of one particular country. In some instances, and particularly for older and less efficient vessels, fishermen may not be able to operate profitably in one country and may reflag their vessel in another where taxes, fuel costs, and crew salaries are less onerous. While there are several major reasons for reflagging a vessel, one reason of growing concern is reflagging to avoid internationally agreed measures for the conservation and management of living marine resources. By reflagging a vessel with a country that is not a signatory to an agreement designed to manage and/or conserve living marine resources, a vessel may avoid the regulations/conservation measures for a regional area. The problem is compounded by the fact that many of the countries frequently used for reflagging simply do not have the staff to monitor the fishing operations of their flagged vessels throughout the world. The issue of reflagging is gaining international attention and is the subject of the proposed Agreement to Promote Compliance with International Conservation and Management Measures for Fishing Vessels on the High Seas approved by the Food and Agriculture Organization of the United Nations in November 1993 for ratification by interested States.

SPECIAL NOTICE: In the preparation of this report, the authors noted that in many instances reflagging simply involved the transfer of ownership from one owner to another. The reasons for other reflaggings were less clear. However, the purpose of this project was to identify ***trends*** and the results obtained through our research efforts show that reflagging has increased sharply in the last few years.

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Frederick H. Beaudry
Managing Editor
Silver Spring, Maryland

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PREFACE

This report provides an analysis of the trends in the world's fishing fleet operations using information obtained and verified from a variety of sources, such as Lloyd's Register of Shipping, the Food and Agriculture Organization (FAO) of the United Nations, the Office of Naval Intelligence (ONI) of the United States Navy, and U.S. Diplomatic Missions overseas. Several recent developments have focused considerable attention on global high-seas fishing fleet activity because of their potential impact on the world's living marine resources. In particular, the over-capitalization of the world's fishing fleets (Appendix 1) and subsidies to portions of that fleet, have caused the world's annual catch to reach approximately 100 million metric tons in 1989, which is generally thought to be a level which reaches or exceeds the annual maximum sustainable yield. In addition, within the last ten years, the sustained and rapid construction of technologically advanced high-seas fishing vessels capable of efficiently harvesting vast quantities of fish in short periods of time has placed stress on some stocks. The United Nations moratorium on high-seas large-scale pelagic driftnet fishing has caused some of the affected vessels to target other fishery stocks using different fishing methods. The straddling stock issue presently being addressed by a variety of international organizations has provided some unique and difficult challenges. The illegal fishing within certain countries' 200-mile Exclusive Economic Zones (EEZ) and the reflagging of vessels to avoid regulations designed to effectively manage and conserve fisheries resources are significant issues. These issues are rooted in the world's demand for the relatively inexpensive protein provided by these fisheries resources and the potential economic gain that can be obtained by fulfilling that demand.

In preparing this report, the authors had substantial leeway in conducting the analysis for their particular region since considerable differences exist in the type of fisheries, such as coastal or high-seas, employed by the countries of these regions. To assure as much accuracy as possible, applicable portions of each regional draft analysis were provided for review and comment to U.S. Embassies, Department of State, other U.S. government agencies, and foreign government and diplomatic officials. Considerable difficulty was experienced in developing the analyses for the former Soviet Union republics primarily because much of the data was either non-existent or not available for dissemination. A few similar situations were encountered with data in other parts of the world and the authors noted this problem in their analyses.

With respect to this valuable and renewable resource, the world catch peaked at 100 million metric tons in 1989 and has since declined to 97 million tons. Most experts agree that there is a sustainable harvest ceiling to what was once thought to be a limitless resource. This fact poses some critical challenges for the world community. Some observers believe that the fishing industry has the potential to expand catches through the use of more efficient fishing vessels, gear, or methods. Others desire to develop fisheries for underutilized species while some individuals or countries view aquaculture as a major source of supplementing wild stock catches from the sea. However, no matter what their beliefs, most of the world community now concedes that overfishing, biological fluctuations, variable physical oceanographic conditions, increasing pollution, loss of marine habitat, expanding harvesting efficiency, and other factors can have a major impact on world stocks of marine fish and shellfish.

In some cases, brand and company names have been included in this report. It is not the policy of the U.S. Department of Commerce to endorse any product or company. The inclusion or omission of any product or company does not reflect any view by the U.S. Department of Commerce.

The regional analyses provided by this document will rapidly lose their relevancy as the world fishing fleets change their operations in response to ever-changing political and economic conditions, and resource availability. The authors thus anticipate that this document will require substantial updating within the next two to three years to reflect these changes and thus maintain its viability as a useful reference.

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WORLD OVERVIEW

World harvests of fish and shellfish peaked at a record 100 million metric tons in 1989, but declined to slightly under 97 million metric tons by 1992. A ceiling to what was once thought to be a limitless resource poses critical challenges to both fishermen and fishery administrators around the globe. A total 23,718 high-seas fishing vessels registering 11 million-gross registered tons (GRT) operated world-wide in 1992. These high-seas vessels were responsible for catching much of the approximately 82 million tons of marine fish and shellfish harvested in 1992. Medium-sized (100- to 499-GRT) and small coastal vessels (under 100-GRT) also caught large quantities of fish and shellfish in 1992.

Managers of national fisheries or regional fisheries (such as the European Community) have reacted to declining catches in recent years by imposing stricter management regimes or by seeking opportunities in distant waters. The waters around Africa, for example, are an important source of fish for fishermen from Asia and Europe alike. Many fishermen are looking at Latin American as a possible future area for investment. As the possibility for expansion grows smaller, there is growing pressure to seek opportunities through the creation of joint venture operations in cooperation with other countries. Reflagging is another avenue being used by some fishermen to gain access to distant-water fishing grounds.

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I. WORLD OVERVIEW

There are several important points about world fisheries that will assist the reader in comprehending the status of these diverse fisheries and fishing fleets:

WORLD CATCH IN 1991:
(most recent complete data available)

- The world catch was slightly under 97 million metric tons in 1991 and is projected to be approximately the same in 1992.

- The marine catch was nearly 82 million tons (85% of the world's total catch).

- The inland/freshwater catch was slightly over 15 million tons (16%).

- African countries landed 3 million tons (4%) of the marine catch in 1991.

- Asian countries harvested 35 million tons (43%) of marine fish and shellfish.

- The Commonwealth of Independent States (Russia, Ukraine and Georgia) fishermen landed over 9 million tons (10%) of the marine catch of fish and shellfish. The Russian Federation harvested 6.7 million tons of this total.

- East European countries (Poland, Romania and Bulgaria) caught less than 1 million tons; their catch decreased drastically in recent years.

- Latin American fishermen harvested over 15 million tons (18%) of the 1991 marine catch.

- North American nations caught over 8 million tons (10%) of the 1991 harvest of marine fish and shellfish.

- West European countries harvested slightly less than 11 million tons (13%) of marine fish and shellfish.

- All other nations harvested over 1 million tons (2%) of the catch of marine fish and shellfish.

WORLD FISHING FLEETS IN 1992:

- There were an estimated 23,718 high-seas fishing vessels registering 11 million-GRT in the world in 1992 (see Appendix 1 on page 35).

- The major Asian fleets operated an estimated 4,000 distant-water fishing vessels in 1992.

- The Baltic fishing fleets numbered 578 vessels, including 358 high-seas vessels in 1992. The high-seas fleet registered slightly less than 1.2 million GRT, accounting for the bulk of the registered tonnage.

- The East European fishing fleet (Bulgaria, Poland, and Romania) owned 391 vessels (579,000-GRT), including 159 high-seas vessels with a gross tonnage of 551,000-GRT.

- The Commonwealth of Independent States fishing fleet numbered an estimated 3,144 vessels (7.1 million GRT) including 2,261 high-seas vessels registering 6.8 million gross registered tons.

- The West European fishing fleet numbered an estimated 109,000 vessels, including 804 high-seas vessels registering 868,000 gross registered tons in 1992.

REFLAGGING:

- 200+ former Asian tuna vessels have been reflagged to other countries in recent years. Information about other fleets is not available.

- 16 vessels having a total tonnage of 38,382-GRT, from the three Baltic Republics were reflagged, mostly in Eastern Europe, during the last 2-3 years.

- 250+ vessels, with a total tonnage of over 300,000-GRT, have been reflagged to Latin America countries since 1986. This is 1/3 to 1/2 of all large fishing vessels operated by Latin American countries.

- 40+ Polish vessels were sold or reflagged to countries all over the world by 1993.

■ 26 high-seas vessels (160,408-GRT) from Russia were reflagged in Panama, Cyprus, and other countries in 1993.

■ 6 vessels (18,945-GRT) from the Ukraine were reflagged in Panama, Malta, Russia, and Estonia in 1993.

■ 100+ vessels from Western Europe were reflagged in many countries (see below) in 1993.

■ The countries used most frequently for registering reflagged fishing vessels during 1990-93 include: **Cyprus**, **Honduras**, **Malta**, and **Panama**. Belize, Cayman Islands, Dominican Republic, and St. Vincent play a lesser role. Information about Liberia is not available.

II. REGIONAL SUMMARIES

A. AFRICA

African fisheries range from artisanal fisheries using small wooden canoes to modern high-seas vessels equipped with the latest fisheries technology. Fishing grounds also vary, from the rich grounds off Mauritania to the relatively nutrient-poor waters in the western Indian Ocean. The waters off Africa have attracted foreign fishermen for many generations, especially from former colonial powers. Beginning in the late 1950s and early 1960s, African nations gained independence and began claiming authority in their national waters from their former colonial rulers. This process was accelerated in the 1970s as many nations around the world extended their Exclusive Economic Zones (EEZ) to 200-miles. Some former colonial powers recognized the changes sweeping the continent and negotiated bilateral fishery agreements in some of their former colonies. Some fishermen, however, continued to fish illegally in African waters, anticipating that most African countries did not have the enforcement capability to halt illegal fishing. Limited enforcement capabilities remains an important problem in most developing nations in Africa today.

In 1977, The European Community (EC) began negotiating international fishery agreements with various African states. The first agreements simply replaced existing bilateral agreements reached between EC member states and their former colonies. Agreements with Mauritania, Guinea (Bissau), Guinea (Conakry), and Senegal were among the first negotiated in West Africa. The most important agreement was signed in 1988 between the EC and Morocco allowing nearly 800 EC vessels access to Morocco's territorial waters. The EC has gradually increased the number of international fishery agreements; in 1993, a total of 19 agreements, with payments worth nearly $775 million, have been signed with African and Indian Ocean countries.

African states also negotiated bilateral fishery agreements with Japan, Taiwan, and the Republic of Korea in the 1970s and 1980s. Asian fishermen were especially attracted to tuna, billfish, cephalopods, and whitefish found in the eastern and southern Atlantic and Indian Oceans. Agreements were also reached with Bulgarian, East German, Polish, Romanian, and Soviet fishery authorities (prior to the breakup of the USSR in the 1991).

African countries, by and large, have not become centers for reflagging. Liberia, however, is a major flag-of-convenience country for maritime vessels throughout the world. The authors have no information on the extent of reflagging under the Liberian flag by fishing vessels. Today, many reflagged fishing vessels are operating out of South African and/or Namibian ports.

B. ASIA

There are four major Asian distant-water fishing fleets: **China, Japan, the Republic of Korea (ROK)**, and **Taiwan**. With the exception of China, these fleets have fished world-wide for over 30 years. China's distant-water fleet emerged in the mid-1980s and is likely to grow for the foreseeable future. Other countries in the Asia-Pacific region possess fishing vessels capable of distant-water fishing operations, but these vessels operate primarily in their own waters.

Japan, the ROK, and Taiwan began large-scale distant-water operations during the 1960s. These fleets have formed an impressive global distant-water

fisheries network which has enabled them to rank among the world's largest in terms of vessel numbers, tonnage, and catch. Asian distant-water fleets focus their efforts on a small number of commercially valuable species: tuna, squid, shrimp, and groundfish (e.g. Alaska pollock).

Fleet statistics from Lloyd's of London for large distant-water fishing vessels indicate that only Japan is significantly reducing its fleet. Official data for each fleet however, indicates that reductions are taking place in Japan, ROK, and Taiwan. Fleet reduction is especially prominent within the Japanese, ROK, and Taiwan trawler fleets.

Distant-water catch statistics for Japan, ROK, Taiwan, and China also indicate that overall distant-water effort has peaked and is decreasing, probably for the foreseeable future. Distant-water catch for the four fleets combined decreased nearly 20 percent from 1987 to 1991. The sector which has shown the most dramatic decrease is the North Pacific trawler fishery.

China is the one notable exception to this "downsizing" trend. The Chinese Government is placing great emphasis on the development of all sectors of Chinese fisheries, with particular emphasis on the distant-water sector. China's plentiful supply of cheap labor gives it an advantage over its industrialized East Asian competition. China has acquired a significant number of large factory trawlers in the past few years, and is conducting distant-water operations primarily in Africa, but is also active in South America and Oceania. All indications are that China's distant-water fleet will continue to increase for the foreseeable future as China attempts to reach an overall fisheries catch goal of 20 million tons by the year 2000.

Other countries in the Asia-Pacific region which possess fishing vessels capable of distant-water fishing operations include: **Australia, Bangladesh, Hong Kong, India, Indonesia, Iran, the Democratic Republic of Korea (DPRK), Malaysia, the Maldives, the Federated States of Micronesia (FSM), Nauru, New Zealand, the Philippines, the Solomon Islands, Sri Lanka, Thailand, Vanuatu,** and **Vietnam**. However, with the exception of distant-water tuna vessels operated by Indonesia, the Philippines and Vanuatu, these vessels operate primarily in the 200-mile EEZ of their respective countries. Vessels from these three countries concentrate their distant-water fishing efforts primarily on Pacific Ocean tuna fisheries.

The early 1990s is a time of transition for the Asian distant-water fishing fleets. Distant-water vessel owners from the developed economies of Japan, ROK, and Taiwan are hiring more foreign labor from developing countries and modernizing their fishing gear, but there is little evidence to suggest that these efforts will be sufficient to make distant-water fishing a viable source of long-term revenue. Increased international regulation of high-seas fisheries and decreased access to coastal fishing grounds serve to accelerate a process where developing Asian countries such as China are taking over catch operations from their industrialized Asian neighbors.

There are indications that other developing countries in the region may become increasingly involved in distant-water fisheries. India, Indonesia, and Iran are three countries with significant natural and human resources which are currently making plans for distant-water fleet development. Iran and Indonesia are concentrating on exploiting tuna resources, while India has been developing a trawler industry geared to supplying its nascent surimi industry.

C. BALTIC STATES

The three Baltic countries, **Estonia, Latvia,** and **Lithuania**, became independent in 1991, after being part of the Soviet Union for almost five decades. The Baltic fishing industries which were part of the centrally planned economy, directed by the Soviet Ministry of Fisheries in Moscow, had to readjust quickly to the new free-market demands. Their fishing fleets were previously supported by the giant (and expensive) Soviet network of fishery support vessels and representatives in foreign ports. The Baltic states themselves now have to secure arrangements for access to fishing grounds in foreign 200-mile zones. The Baltic fisheries also had to face the loss of the infrastructure and domestic Soviet sales network on which they relied over the past half century. Most importantly, they can no longer count on cheap, subsidized Soviet diesel oil, but have to purchase it with foreign currencies. The difficult

transition from a command to a free-market economy has been exacerbated by the need to reorganize the administrative staff following the dissolution of the Soviet Western Fisheries Administration in Riga.

The capacity of the Baltic fishery fleets exceeds the currently available fishery resources. The moratorium on fishing off Namibia and the loss of fishing in the Moroccan 200-mile zone were significant. To counter these unfavorable developments, the Baltic countries have concluded several bilateral fishery agreements and have begun to reduce the gross tonnage of their high-seas fleets. During the last few years, a total of 31 vessels with over 70,000 gross tons have been decommissioned (16 of the units were reflagged) and the process is by no means ended. In July 1993, the Baltic states owned 358 high-seas fishery vessels with a gross tonnage of 1.2 million GRT. The average age of these fleets is only 14 years, but the maintenance and modernization of the fleet is complicated by the fact that the vessels were constructed in countries whose current economic environment is not conducive to efficient supply of spare parts or major repairs.

Among the most important factors for the future profitability of the Baltic fishing industries is the privatization program which all three governments have begun. Another way to obtain sufficient raw materials to operate the vessels and the processing plants lies in the joint ventures with foreign fishing companies which still have abundant fishery resources within their countries' 200-mile economic zones. Leasing and chartering arrangements will help to keep the Baltic fishermen employed.

D. CANADA

Canada is not a participant in high-seas fisheries although it maintains an active interest in high-seas fishing because it is adjacent to some of the world's richest fishing grounds. Foreign vessels have fished in waters off Canada since the fifteenth century, shipping home thousands of tons of Atlantic cod and other fish and shellfish. Canada and France have been involved in complex negotiations since both countries extended their EEZs to 200 miles; the French islands of Saint Pierre and Miquelon both lie close to Newfoundland and the French have claimed rights to fish in these waters. Canada has also been required to deal with countries fishing in the Northwest Atlantic Fisheries Organization (NAFO) area off its coast and with fishing fleets operating beyond Canada's 200-mile EEZ harvesting transboundary stocks of fish. Canadian fishery officials have also dealt with reflagged vessels (flying the flags of Panama and Honduras) appearing off Canada in recent years. Canada has been a strong supporter of responsible fishing.

The outlook for Atlantic Canada's fisheries is not good. Stocks of several key groundfish species have been overfished and may take many years to recover; it will require a mix of good recruitment, favorable oceanic conditions, and reduced fishing to allow these species to recover. Premature fishing could delay the recovery process. The Canadians can be expected to maintain strict controls over fishing in the next few years and will continue to champion the cause of responsible fishing in international fora. Until stocks recover, the Canadian Government may promote fisheries aimed at developing underutilized species or efforts to increase the value-added component of existing fisheries. The outlook for Canada's Pacific fisheries remains favorable.

E. COMMONWEALTH OF INDEPENDENT STATES (CIS)

Following the dissolution of the Union of Soviet Socialist Republics (USSR) in December 1991, most of the component republics established a looser political association called the Commonwealth. The Baltic States and Georgia chose not to join the CIS, so that only two republics with high-seas fishing capabilities remained in the CIS -- the Russian Federation and Ukraine. In October 1993, however, Georgia also asked to become a CIS member.

Russia

In the former Soviet Union, the fishery fleets of all republics operated as a unit divided only by the various fishing regions. Russian, Ukrainian, and Georgian vessels all fished together in any particular fishing ground. The fleets were under the administrative command of the regional administration which organized the so-called expeditions. A fleet of 30 to 40 large stern factory trawlers was managed by a fleet commander whose headquarters were aboard a large baseship. It did not matter from what Soviet republic the vessels originated, they were all part of this highly organized fishing flotilla. The baseship received the catch from

the trawlers, processed it, and passed it on to refrigerated fish carriers for transportation to homeport. The commander's flagship, supplied with fuel and other needs by tankers and cargo transports, distributed these supplies among its vessels. This system, which prevailed for the past 40 years, was suddenly disrupted by the new political arrangements. Each independent country now had to organize its own support and transportation activities, and obtain its own fuel (Georgia and Ukraine have no oil resources and must, therefore, buy diesel oil from Russia or other countries). In addition, the bilateral agreements which were formerly negotiated by the Soviet Ministry of Fisheries were no longer necessarily valid. The Russian Federation, as the internationally recognized successor state to the Soviet Union, took over most of these agreements. Ukraine and Georgia, therefore, have to make their own arrangements to obtain access to foreign 200-mile fishery zones. Georgia is especially disadvantaged because its diplomatic corps and political leverage are limited.

All three CIS countries are currently undergoing a major shake-up of their economic systems. In Russia, the slow process of reform, until recently hindered by a conservative parliament, has made privatization more of a hope than a reality. In Ukraine, a severe economic depression has negatively affected the fishing industry. According to one report, only a third of the Ukranian fishing fleet is deployed in harvesting aquatic resources. No information is available on the fate of the Georgian high-seas fleet following the invasion and occupation of its main fishing port of Poti by rebel troops on October 10, 1993. All CIS republics suffer from the inability to provide their fishing fleets with sufficient quantities of diesel fuel in a timely manner. Confirmed reports indicate that at times as much as a half of the Russian fleet was idling in various ports because of fuel shortages. Other reports describe an even worse situation whereby vessels already deployed on the high-seas had to stop their fishing operations because fuel tankers did not reach them on time. The authors of the regional reports have been unable to verify any fuel shortages in Ukraine or Georgia, but it must be assumed that a similar, if not worse, situation prevails.

The future of the CIS fishing fleets will depend on the ability of the three countries to obtain necessary fishery resources to maintain the fleets' operations. Also important is the export of fishery products to earn hard currencies with which to modernize and replace the fleet, purchase diesel fuel, and support operations in foreign fishing zones. The joint fishery ventures with foreign companies and arrangements to lease, charter, or sell fishery vessels will become an important part of the future activities of the CIS fishery administrators. Russia has a natural advantage because its 200-mile EEZ contains some of the most prolific fishing grounds in the world. Ukrainian high-seas fishing operations will probably have to be reduced along with the fleet. The prospects for the Georgian fleet are bleak and it remains to be seen whether it can continue functioning.

F. EASTERN EUROPE

The three major fishing countries in Eastern Europe, **Poland, Romania,** and **Bulgaria**, have been associated with the Soviet Union in the so-called 5-partite agreement (the former East Germany was the fifth member) whose purpose was to help each other develop high-seas fisheries. Although the Russian Federative Soviet Socialist Republic, now the Russian Federation, was the leading force behind the expansion into the world's oceans, all three East European countries rapidly developed their own fishing fleets. Poland, also built an important and productive network of fishery shipyards which built hundreds of vessels over the past five decades.

Romania and Bulgaria are both adjacent to the Black Sea and their fisheries have been traditionally based on that body of water. In the 1960s, however, they began to buy high-seas fishing and fishery support vessels from the Soviet Union, Poland and Germany, and to build the infrastructure for the processing of landed fish. Along with the increase in the fishery vessel tonnage, their marine catch grew rapidly until the late 1970s when the coastal countries began to extend fishery jurisdictions to 200-miles. Neither Romanian nor Bulgarian fishery administrators were able to adapt themselves to the new conditions. As a result, their catch began to stagnate and finally decrease rapidly; soon the aging fleet became more of a burden than an asset.

The outlook for both industries is bleak, and the lack of rapid privatization helps to perpetuate the inbred inefficiency of large government-owned

corporations. The Bulgarian high-seas company was forced into bankruptcy and for it to continue operations it will have to be bailed out by government funds. In Romania also, the industry is still government-owned and, like everywhere in the former communist countries, its two principal goals are: 1) to maintain the full use of the fishery fleet and the concomitant full employment of its fishermen, and 2) to export fish to earn hard currency.

In Poland, the high-seas fishing industry has better maintained its viability and, although the catch has decreased somewhat and the high-seas fleet shrunk, it continues to maintain a powerful presence on the world oceans. The future, however, is uncertain. Almost the entire Polish high-seas fleet has been concentrated in 1992 and 1993 in the international waters of the Sea of Okhotsk, an enclave surrounded by the Russian 200-mile zone. The Russian Federation, claiming that the fishery resources in that area, as well as their originating stocks in the Russian zone, are in danger of being overfished, are demanding that the Poles, along with the Koreans and the Chinese, stop fishing there. The Poles (and others) refused to do so, stressing that their fishery in international waters is not subject to regulation by coastal states. The Russians are seeking a moratorium on foreign fishing in the Sea of Okhotsk. If this occurs, the Polish high-seas fleet will have to rapidly find new resources, or even more rapidly, reduce the number of its vessels.

The Socialist Federative Republic of Yugoslavia (SFRJ) ceased to exist in 1991 when Croatia and Slovenia declared their independence. The country's fisheries were based on the Adriatic Sea except for an unsuccessful attempt in the 1970s to fish for tuna. Yugoslavia has had no high-seas vessels since 1982. The newly formed states are not expected to expand into high-seas fisheries in the near future.

G. LATIN AMERICA

Few Latin American countries currently conduct significant distant-water fisheries, or are likely to initiate them in the foreseeable future. Latin American countries conduct mostly coastal fisheries, but a few are capable of distant-water/high-seas operations. **Chilean** fishermen conduct relatively limited distant-water operations, but the country's dynamic fishing industry is gradually expanding high-seas longline operations in the southeastern Pacific and trawl fisheries off the Falklands and other southern Atlantic islands. **Cuba** conducted Latin America's largest distant-water fishery during the 1980s on various Atlantic and Pacific grounds. The termination of the Soviet oil subsidy, however, has forced the Cubans to end almost all of these operations. **Mexico** has a modern fleet of tuna purse seiners which is capable of distant-water operations. The fleet is primarily deployed off the country's own coast and off neighboring countries in the eastern tropical Pacific. Some vessel owners are currently seeking alternative distant-water grounds because of the problems associated with marketing eastern Pacific tuna. The Government has heavily subsidized the industry in the past, but the current Administration has terminated such support. It is unclear if Mexican tuna companies will be able to initiate new distant-water fisheries without Government subsidies. **Venezuela** also deploys tuna seiners in the eastern tropical Pacific and faces many of the same problems Mexican tuna fishermen confront. Venezuelan fishermen also deploy a variety of tuna and other vessels off the neighboring countries in the Caribbean and on the Guianas Banks.

Foreign fishermen deployed substantial effort off Latin America during the 1980s. Foreign catches peaked at about 2.5 million tons in 1989-90. Much of this catch was harvested by the heavily subsidized state-owned fleets of the communist countries (**Bulgaria, Cuba, Poland**, and the **USSR**). When the Soviet Union disbanded in 1991 and the Soviet oil subsidy was no longer available, these countries could no longer continue to support unprofitable distant-water activities. Other countries continue much smaller, but more lucrative, operations. **Japan** and **Korea** exhibit remarkably similar fishing patterns off Latin America. The two countries conduct substantial longline fisheries for tuna and billfish off the western coast of South America and shrimp fisheries along the northern coast. They initiated a squid fishery off the Falkland Islands in the early and mid 1980s and off Peru and Ecuador in 1990. Both countries reported sharp overall catch increases off Latin America in 1991. **Taiwan** fishermen also conduct tuna longline fisheries and initiated significant squid fishing off the Falklands in 1986. **Spain** initiated a significant squid fishery in 1986 off

the Falklands. **United States** fishermen have reduced effort in recent years and currently conduct only limited longlining in the Caribbean, shrimp trawling off Guyana, various fisheries off Colombia, and scattered operations off other countries.

Latin American countries pursued highly restrictive policies toward foreign fishermen during the 1970s-80s. Most countries (especially **Brazil**, **Chile**, and **Mexico**) are likely to continue pursuing such policies during the 1990s, but other countries are providing access for foreign fishermen to generate revenue and/or acquire modern fishing vessels and technology. **Argentina** began to license foreign fishermen from non-communist countries (Japan and Taiwan) in 1992 under a new vessel charter arrangement and has signed an agreement with the EC that may provide access for up to 70 vessels and allocations of up to 250,000 tons. As part of the access arrangements most of the vessels would be eventually transferred to Argentine owners. The EC agreement and vessel chartering arrangement has yet to be fully tested in Argentina and it is unclear if either will become a long-term policy. Argentine officials are constrained by Falkland policies because both are granting licenses to fish shared stocks. **Colombia** licenses about 150 foreign vessels, but is unlikely to increase catch allocations because of resource limitations. **Ecuador** has since 1985 permitted 18-32 foreign vessels to operate in association or under licensing arrangements with domestic companies. The Government sharply reduced the number of licenses in late 1992 because of concern over squid stocks. The **Falkland Islands** has, since 1987, licensed (mostly 4-6-month periods) about 300 foreign vessels annually. The income generated has become a major revenue source for the Falklands Island Government. Falkland officials may have to curtail future allocations because Argentina in 1992 also began to approve charters for foreign fishermen. **Guyana** issued over 100 fishing licenses to foreign fishermen in 1992. The Government is unlikely to increase the number of licenses issued and has been gradually reducing the number in recent years due to resource problems. **Panama** licenses foreign tuna vessels and issued about 30 licenses in 1993. **Peru** has provided access to foreign fishermen in the past, but domestic fishermen have sharply criticized such arrangements. The Fujimori Administration has reported significant income from the sale of about 50 (3-4 month periods) licenses annually for surplus stocks of squid. The licenses are offered through competitive bidding. The Fujimori Administration is unlikely to increase license sales until more is known about squid stocks. The Administration also faces criticism from industry groups opposed to foreign fishing. **Suriname** has since 1985 annually issued 120-180 licenses to foreign fishermen (mostly Japan, Korea, and Venezuela), but in 1992 issued more than 220 licenses. **Trinidad** licenses a small number of foreign fishermen annually. Since 1991 the number has varied from two to six.

Many foreign owners have registered their fishing vessels in Latin American countries to obtain flag-of-convenience registrations. Such registrations are complicating both national and international fishery management efforts. The authors have only limited data on the extent and motivation for this activity. The number of vessels and capacity involved, however, is significant. The foreign distant-water effort is especially disturbing because the fishermen are concentrating their effort on a relatively small number of high-value species (billfish, cod, salmon, squid, swordfish, tunas, and others). Most of these species are already heavily utilized by coastal countries and the growing distant-water effort on the high seas thus represents a potentially serious threat to both national and international management efforts.

Concentration in Latin America: Many foreign vessel owners seeking flag-of-convenience registrations appear to have selected Latin American countries. The authors cannot fully explain why so many foreign owners have chosen to obtain the registrations in Latin America. Other countries (Cyprus, Liberia, Malta, Mauritius, Sierra Leone, Singapore, etc.) also register foreign-owned vessels. It may be that the Latin American countries offer more secure communication, better established bureaucratic systems, and superior financial services than the African countries and are more distant from the country of origin than countries like Cyprus, Malta, and Singapore. Another key factor is that two of the most important Latin American countries making flag-of-convenience registrations (Panama and Honduras) still maintain diplomatic relations with Taiwan rather than China. Such relations permit Taiwan fishermen seeking flag-of-convenience

registrations to more easily do business and to obtain assistance from their Government.

Country selection: The primary Latin American countries making flag-of-convenience registrations include: Panama, Honduras, St. Vincent, and the Caymans, but other countries also register smaller numbers of vessels. Each of these countries decided to offer flag-of-convenience registrations as an income-generating activity. Some vessels owners may have selected countries (Panama) with important banking and communications hubs. Some countries (the Caymans and Panama) have tight bank secrecy laws. Other choices (the Caymans) offer stable governments and dependable legal systems. One country (Panama) even uses U.S. dollars, facilitating financial dealings.

Registrations increasing: The licensing of fishing vessels in Latin America to obtain flag-of-convenience registrations appears to have increased significantly since 1986. Lloyd's data suggest that the number of large fishing vessels registered in the four countries increased from only 70 vessels in 1986 to 170 vessels in 1992, or by nearly 150 percent. While the Lloyd's data give some idea of annual trends, they probably under-estimate the actual number of vessels involved. Some countries appear to be changing their vessel registration policies. Cayman officials modified their policy in 1989 and no longer offer flag-of-convenience registrations to foreign fishing vessels. Honduran officials are currently assessing their policy. On balance, however, the countries involved are registering an increasing number of foreign-owned fishing vessels.

Number of vessels: The number of large fishing vessels (500-GRT or greater) with Latin American flag-of-convenience registrations probably totals about 250 vessels. A full estimate of the number of vessels involved would have to include the nearly 750 medium-sized vessels (100 to 499-GRT) which have also been registered in Latin America by foreign owners. Some existing international vessel registries appear to under-estimate significantly the number of vessels involved. The authors estimate that a Latin American flag-of-convenience fleet totals nearly 1,000 fishing vessels as of November 1993.

Catch: Virtually no data exists on the catches achieved by the flag-of-convenience vessels. Most fishermen do not report their catch to the country where they are flagged or to international bodies. The authors estimate that the large flag-of-convenience vessels probably catch over 0.8 million tons and the medium-sized flag-of convenience vessels probably catch about 0.6 million tons annually. This means that the total catch of the Latin American flag-of-convenience vessels could total 1.4 million tons annually. This is a huge catch, but it may understate the actual impact of these vessels. Since distant-water operations are expensive to conduct, the fishermen involved target high-value stocks, many of which are already heavily fished. Focusing this massive effort on such stocks may be having a major adverse impact on both national and international management efforts.

Owners: Many flag-of-convenience vessels are owned by Taiwan companies or overseas Chinese located in other countries. Taiwan owners have been especially active in seeking flag-of-convenience registrations. This is partly because many coastal countries (especially India, Myanmar, and Sri Lanka) recognize China and thus refuse to grant fishing licenses to Taiwan-flag vessels, or allow private companies to sign joint venture or leasing contracts permitting the operation of Taiwan-flag vessels. Companies in a few countries (especially Korea, Russia, and Spain) have also registered substantial numbers of fishing vessels; about 15 other countries register a smaller number of vessels.

Deployment: Few reflagged vessels are deployed off Latin America, but they have been observed on virtually every important world fishing ground. In most cases the vessels never transship their catch through or call at the ports of the Latin American country in which they are registered.

Transfers: Some vessels are deployed with the knowledge and approval of the originating government. Some officials may even encourage the practice. In other cases, the originating government is concerned over these reflaggings and has neither approved the reflagging nor authorized the vessels to conduct high-seas fisheries. Russian officials in particular are troubled about the transfer of state-owned fishing vessels to other countries. The vessels involved were the property of Russian state companies, but at least some have apparently been transferred with little or no payment to the

Government. More than 80 large Russian/East European-built vessels have been transferred to Latin American countries.

H. WESTERN EUROPE

West European fishing fleets harvest approximately 12-percent of the world's fish and shellfish. This harvest is usually sold fresh or is processed into high-value seafood generating billions of dollars in world markets. European fishermen operate a range of fishing vessels, from small coastal vessels to factory trawlers. Unlike fishermen from some Asian countries, the West Europeans tend to fish close to home -- in the North Atlantic and the Mediterranean.

The EC

The EC has worked assiduously to negotiate a network of fishery agreements on behalf of its member states and over 800 EC-flag fishing vessels currently fish from various ports along the coast of Africa and into the Indian Ocean. The EC is now attempting to open access to Latin American waters for their fishing vessels because several important stocks of North Atlantic fish, such as Atlantic cod, have collapsed in recent years. This has placed a tremendous financial burden on the fishing industries of many EC countries dependent upon fisheries in the North Atlantic region. In 1993, over 100 West European vessels were reflagged to foreign registry. This number could double if EC negotiators are unable to obtain access to Namibia in 1994, or if Argentina fails to ratify the bilateral agreement allowing EC vessels to fish in its waters in 1994.

Despite a fleet of nearly 800 high-seas fishing vessels, only 7-8 West European-flag vessels are believed to be fishing on the high-seas in the Atlantic and Pacific in 1993. The vessels that currently fish the high-seas include: the German-flag vessels *Jan Maria*, the *Dirk Dirk*, and the *Gerda Maria* and the Dutch-flag vessels *Dirk Diederick*, *Franziska, Cornelis Vrolijk Fzn*, and *Zeeland*. These vessels are built to roam the oceans of the world, catching or "klondiking" (buying), processing, and freezing up to 250 tons of herring, mackerel, or horse mackerel a day. One tuna purse seiner, the *Isabel Tuna*, flying the Cypriot flag, is currently fishing in the Eastern Tropical Pacific. A Spanish tuna purse seiner, the *Monteclaro*, reportedly sank in this same area on July 14, 1993.

EC countries may redeploy or decommission over 200 high-seas fishing vessels by 1996. Spain, Portugal, and the United Kingdom will mainly redeploy their vessels in the next 2 years, but some vessels may be decommissioned. Greece, France, Germany, and Denmark, will mostly decommission their vessels. Some vessels may be involved in joint venture arrangements allowing the transfer of ownership in return for access to the resource for a limited period of time. Most Spanish and Portuguese vessels will be deployed off Namibia and Argentina as foreign-flag vessels fishing with coastal state licenses, or as part of a joint venture arrangement with companies in the coastal country.

Argentina - The EC initialed an agreement with Argentina during December 1992. The agreement was a major policy change for the Argentines who had previously imposed restrictive conditions for access. The agreement will permit 70 EC vessels to fish off Argentina under various joint venture arrangements. Most of these vessels will be Spanish. The agreement has not yet been ratified by Argentina.

Namibia - The EC has not yet been able to negotiate an access agreement with Namibia, although it remains a high priority. Namibia has, to date, rejected all EC offers to negotiate a fisheries agreement. Namibia ended all foreign fishing in its 200-mile EEZ when it became independent in 1991. This affected 200 Spanish and 10 Portuguese vessels. Namibian officials now report that the country's hake stocks are recovering and that they hope to market this popular fish in EC markets. They will require EC concurrence to do so. It is likely that bilateral fishery negotiations between the EC and Namibia will resume in 1993 or 1994. It is unknown if all 210 EC vessels, which fished there before 1991, will be able to return to Namibian waters. Those that cannot will likely be sold, transferred to other non-fishing operations, or scrapped.

Indian Ocean - The EC has negotiated a series of agreements which provide access for EC tuna seiners to Indian Ocean resources. This fleet may expand slowly in the next few years, especially if Italian vessels join this fleet.

Pacific - It is likely that some Spanish or French world-class tuna purse seiners are fishing in the Western Pacific Ocean. One Spanish tuna vessel, the *Monteclaro*, sank in the Eastern tropical Pacific on July 14, 1993. There are 6 ex-Spanish tuna vessels currently reflagged in Panama which may be fishing for tuna in the Pacific, along with 1 vessel reflagged in Malta and 1 reflagged in Cyprus.

The EC is the only West European body with a major, long-term program aimed at reducing the size of its fleet. The EC's Multi-Annual Guidance Program (MAGP) is a 10-year effort designed to reduce the size of the EC fleet by 1996. This program, however, is primarily aimed at reducing the size of *coastal* fishing vessels, although some high-seas vessels will be included. The MAGP calls for vessels to be permanently withdrawn from EC rolls, through transfer to non-fishing status, sale to third countries, or scrapping. *The number of EC vessels that will be decommissioned ultimately depends upon the success of EC negotiators in gaining access to Namibian waters and to the success of the Argentine agreement when it is approved.*

Non-EC countries:

The non-EC countries are unlikely to deploy large numbers of their vessels in distant-water fisheries. These countries have never operated extensively beyond the North Sea or North Atlantic or Mediterranean and are unlikely to initiate such high-cost operations requiring lengthy trips at this time. However, individual companies may seek to fish under joint venture arrangements in distant waters, such as off New Zealand, South Africa, Peru, or possibly even off Russia. The shift to distant waters will depend upon the recovery of cod stocks in the North Atlantic.

The authors believe that approximately *30 non-EC high-seas vessels could be sold between 1993 and 1995.* Icelandic fishermen are likely to sell some used vessels to reduce operating costs of companies adversely affected by the current (1991-93) decline in cod stocks, which are not expected to recover until 1996-98. Norwegian fishermen may also sell some vessels during 1993-94. Faroese fishing vessels, in particular, are for sale at attractive prices. The vessels were built with generous state subsidies and are now being sold for a fraction of their original cost. Some of Greenland's fleet of shrimp trawlers and cod factory stern trawlers could be sold, though in all probability to other Nordic countries.

Reflagging:

Reflagging is becoming significant as economic conditions force fishermen to seek alternatives to existing fishery management regimes. Danish fishermen reflagged a few vessels in Panama in an attempt to fish wild Atlantic salmon in 1989-91. A Spanish and a Belgian firm currently charters Taiwanese longliners out of Honduras. Cyprus and Malta have become important centers for reflagging in 1993. Belize, Dominican Republic, Panama, and St. Vincent are all attracting West European vessel registration. Norwegian fishery enforcement patrols recently encountered several Caribbean-flag vessels fishing for cod between the Russian and Norwegian 200-mile limits in international waters of the Barents Sea.

III. APPENDIX SECTION

A. Maps

Robinson Projection

The United States Government has not recognized the incorporation of Estonia, Latvia, and Lithuania into the Soviet Union. Other boundary representation is not necessarily authoritative.

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Arctic Region

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II. APPENDICES

B. Photographs

***Photo 1.**--Latin American fishermen use mostly small coastal vessels, but are acquiring increasingly larger vessels. D. Weidner.*

***Photo 2.**--Cuba's high-seas fleet once fished throughout Latin America from the modern fishery port of Havana. D. Weidner.*

Photo 3.--The Soviet distant-water fleet catch off Latin America peaked at 1.6 million tons in 1990.

Photo 4.--The Japanese trawler Eikyu Maru No. 81 fished off Alaska in 1975.

Photo 5.--The Republic of Korea's stern trawler ***Gae Yang Ho*** *in 1970.*

Photo 6.–A modern Norwegian freezer trawler.

Photo 7.--The USSR baseship Baltiskaia Slava.

II. APPENDICES

C. Statistical Tables

Appendix 1.--WORLD. Fishery and fishing support fleets, by type of vessel, number, and gross registered tonnage; for vessels over 500-GRT, 1975, 1980, and 1985-92.

Year	Fishing vessels		Support vessels		Total high-seas fleet	
	Number	*Tonnage*	*Number*	*Tonnage*	*Number*	*Tonnage*
1975	18,217	7,830,244	723	3,508,374	18,940	11,338,618
1980	20,671	9,195,225	852	3,473,892	21,523	12,669,117
1985	21,251	9,446,935	852	3,538,451	22,103	12,985,386
1986	20,974	9,521,831	865	3,852,767	21,839	13,374,598
1987	21,267	9,666,065	875	3,831,468	22,142	13,497,533
1988	21,827	9,960,566	879	3,851,775	22,706	13,812,341
1989	22,149	10,139,102	881	3,984,871	23,030	14,123,973
1990	23,132	10,764,053	989	4,135,738	24,121	14,899,791
1991	23,581	11,069,085	1,032	4,151,741	24,613	15,220,826
1992	23,718	11,146,416	702	2,087,823	24,420	13,234,239

Sources: Lloyd's Register of Shipping. *Statistical Tables*. London, various years. The data are completed as of June of each year, except for 1992 which is effective through December 31, 1992. *World Fleet Statistics (as of 31 December 1992)*., London, 1993; page 25.

Appendix 2.-- Asia. Distant-water vessels, by type of fishery, 1985-91.

Vessel Type	1985	1986	1987	1988	1989	1990	1991
				Number of Vessels			
China&							
N. Pacific Trawlers	5	NA	NA	5	NA	NA	15
Trawlers - Other Vessels	2	NA	NA	82	NA	NA	183
Tuna Longliners	-	-	-	-	-	-	-
Squid Jiggers	-	-	-	-	-	-	-
China Total	17	NA	NA	87	NA	NA	198
Japan#							
N. Pacific Trawlers	97	93	95	99	100	98	70
Trawlers - Other	225	213	220	215	196	182	145
Tuna Purse Seiners	35	38	34	39	37	35	45
Tuna Longliners	823	818	819	807	806	791	790
Squid Jiggers*	174	145	151	269	324	133	113
Driftnetters	422	445	440	428	451	359	276
Japan Total	1,776	1,752	1,759	1.857	1,914	1,598	1,439
Republic of Korea@							
Otter Trawlers	233	245	230	231	221	219	146
Shrimp Trawlers	NA	NA	NA	NA	NA	NA	112
Tuna Purse Seiners	NA	NA	NA	NA	NA	NA	32
Tuna Longliners	280	295	338	373	387	285	285
Squid Jiggers	33	32	35	38	46	90	98
Driftnetters	NA	NA	NA	NA	NA	NA	90
Other	105	104	107	119	145	188	4
ROK Total	651	676	710	761	799	783	771
Taiwan*							
Trawlers - Other	626	573	632	670	706	719	663
Tuna Purse Seiners	NA	NA	NA	NA	19	35	46
Tuna Longliners	542	610	653	698	779	841	759
Squid Jiggers	16	19	37	62	74	77	99
Driftnetters	3	2	2	3	12	14	14
Other	97	106	108	135	-	-	-
Taiwan Total	1,284	1,310	1,432	1,568	1,709	1,786	1,613
Grand Total	3,728	3,738	3,901	4,273	4,422	4,167	4,021

& - Data for the Chinese fleet comes from the following sources: 1985-various reports in fisheries press; 1988-*Fishing News International*, "China Expands Deepsea Fleet, December 1988; 1991-*Fishing News International* , "China Expands Deepsea Fleet," January 1992.

- Data for the Japanese fleet comes from the Fisheries Agency of Japan, *Gyogyo Yoshokugyo Seisan Tokei Nenpo*.

@ - Data for the ROK fleet comes from the Ministry of Agriculture, Forestry, and Fisheries, *Statistical Yearbook of Agriculture, Forestry and Fisheries*.

* - Data for the Taiwan fleet comes from the Taiwan Fisheries Bureau, *Fisheries Yearbook-Taiwan Area*. Taiwan vessel statistics do not differentiate between distant-water and other fisheries. This table gives the number of all powered Taiwan fishing vessels greater than 100GRT, most of which are believed to be distant-water fishing vessels. Many distant-water driftnet vessels, however, were less than 100GRT and are not counted here.

Appendix 3.-- Asia. Distant-water catch, by type of fishery, 1985-91.

Vessel Type	1985	1986	1987	1988	1989	1990	1991
				Metric tons			
China							
N. Pacific Trawlers@	1,600	3,200	16,529	18,419	31,139	27,826	121,254
Trawlers - Other&	22,419	88,845	88,947	104,729	100,000	100,000	100,000
Tuna Longliners	-	-	-	-	-	-	-
Squid Jiggers	-	-	-	-	-	-	-
China Total	24,019	92,045	105,476	123,148	131,139	127,826	221,254
Japan							
N. Pacific Trawlers	543,654	810,348	864,163	790,913	683,656	422,180	152,374
Trawlers - Other	388,716	447,895	552,730	549,703	475,194	402,771	333,076
Tuna Purse Seiners	139,697	156,749	136,899	168,617	140,594	158,874	169,493
Tuna Longliners	232,704	229,035	201,781	216,483	169,405	169,364	180,357
Squid Jiggers*	234,334	215,557	416,189	405,111	436,523	95,194	124,069
Driftnetters	140,963	121,773	165,058	130,283	141,263	145,342	86,566
Japan Total	1,680,068	1,981,357	2,336,820	2,261,110	2,046,635	1,393,725	1,045,935
Republic of Korea							
N. Pacific Trawlers	494,455	610,274	454,492	304,343	362,099	312,218	177,400
Trawlers - Other	95,741	104,281	131,373	129,676	150,928	163,486	181,360
Tuna Purse Seiners	11,279	27,732	58,752	79,397	115,754	173,343	227,518
Tuna Longliners	93,090	95,401	87,437	81,726	64,213	69,524	47,074
Squid Jiggers	11,809	45,917	86,311	92,359	120,854	88,843	150,039
Driftnetters	58,623	43,028	62,852	84,267	113,173	99,587	62,912
ROK Total	764,997	926,633	881,217	771,768	927,021	907,001	846,303
Taiwan							
Trawlers - Other	162,650	179,530	202,471	260,002	228,155	201,273	184,890
Tuna Purse Seiners	50,380	52,011	55,683	114,617	117,164	124,599	107,062
Tuna Longliners	119,232	151,233	146,414	147,615	139,113	155,921	134,574
Squid Jiggers	48,966	50,945	115,249	129,177	117,717	88,254	124,176
Driftnetters	55,512	46,282	67,930	62,146	118,131	163,146	142,308
Taiwan Total	436,740	480,001	587,747	713,557	720,280	733,193	693,010
Grand Total	2,905,824	3,480,036	3,911,260	3,869,583	3,825,075	3,161,745	2,806,502

@ - Data for 1985-90 are catch statistics submitted by Chinese Government to multilateral negotiations on Central Bering Sea fisheries. 1991 data is from Food and Agriculture Organization of the United Nations, *Fishery Statistics-Catches and Landings*, 1991.

& - Data for 1980-88 comes from Jie, et. al, "Reform and Development of China's Fisheries." The data for 1989-91 are estimates based on numerous fishery press reports which report average annual distant-water trawler catch to be approximately 100,000 tons.

* - Japanese squid jigging statistics include coastal and off-shore catch until 1990.

Sources: Fisheries Agency of Japan, *Gyogyo Yoshokugyo Seisan Tokei Nenpo.*; Ministry of Agriculture, Forestry, and Fisheries (ROK), *Statistical Yearbook of Agriculture, Forestry and Fisheries.* ; Taiwan Fisheries Bureau, *Fisheries Yearbook-Taiwan Area.*

Appendix 4.--Western Europe. High-seas fishing fleet versus total fishing fleet, 1975-92.

Year	High-seas Vessels		Total High-seas Fleet	Regional Fleets		Total Fleet (estimated)
	EC	Non-EC		EC	Non-EC	
	Number of Vessels					
1975	406	392	798	52,539	57,036E	109,575
1976	390	416	806	52,606	53,336E	105,942
1977	367	416	783	52,357	54,354E	106,711
1978	342	436	778	52,613	55,864E	108,477
1979	322	435	757	51,893	58,455E	110,348
1980	309	419	728	50,826	59,559E	110,385
1981	295[b]	388	683	81,578	32,037E	113,615
1982	279	374	653	82,667	30,379E	113,046
1983	260	367	627	83,229	30,176E	113,405
1984	260	374	634	91,602	29,526E	121,128
1985	255	376	631	93,125	27,933E	121,058
1986	458[c]	172	630	85,919	27,115E	113,034
1987	518	166	684	97,943	26,124E	124,067
1988	584	189	773	96,662	24,894E	121,556
1989	607	197	804	95,211	21,385E	116,596
1990	623	203	826	91,209	20,122E	111,331
1991	648	209	857	96,173	20,951E	117,124
1992	591	213	804	90,000E	19,000E	109,000

Sources: *Lloyd's Register of Shipping Statistical Tables*, Lloyd's Register of Shipping, London, UK, various years (high-seas fleet only); *Fishery Fleet Statistics*, Bulletin of Fishery Statistics, Food and Agriculture Organization of the United Nations, Rome, various years; *Annual Report on German Fisheries*, Federal Ministry of Food, Agriculture and Forestry, Bonn, various years; *Årsberetning vedkommende Norges Fiskerier*, Fiskeridirecctoratet, Fiskeflåten, various issues, *L'évolution du secteur belge de la pêche maritime*, Conseil Central de l'Economie, Commission Consultative Spéciale de la Pêche, Bruxelles, various years; *Sea Fisheries Statistical Tables*, Government Statistical Service, London, various years. (E) = Estimate.

[b] Greece joined the EC on January 1, 1981.

[c] Portugal and Spain joined the EC on January 1, 1986.

Appendix 5.--Western Europe. Tonnage of high-seas fishing fleet versus total fishing fleet, 1975-92.

Year	High-seas Vessels		Total High-seas Fleet	Regional Fleets		Total Fleet (estimated)
	EC	Non-EC		EC	Non-EC	
	Gross Registered Tons					
1975	426,461	404,716	831,177	1,196,624	1,509,440	2,706,064
1976	392,446	431,252	823,698	1,188,878	1,619,659	2,808,537
1977	389,624	434,630	824,254	1,165,496	1,549,149E	2,714,645
1978	366,058	349,200	715,258	1,153,254	1,565,767E	2,719,021
1979	344,274	441,728	786,002	1,092,701	1,697,414	2,790,115
1980	331,040	421,947	752,987	1,087,586	1,713,220	2,800,806
1981[d]	319,446	395,300	714,746	2,140,995	566,210E	2,707,205
1982	287,969	386,260	674,229	2,118,966	516,575E	2,635,541
1983	262,469	378,969	641,438	2,098,895	506,497E	2,605,392
1984	255,160	386,204	641,364	2,081,182	514,830	2,596,012
1985	241,520	389,110	630,630	2,055,355E	519,237E	2,574,592
1986[e]	465,167	152,922	618,089	1,985,861E	588,893E	2,574,754
1987	532,580	155,501	688,081	2,056,117E	702,774	2,758,891
1988	614,683	187,081	801,764	2,020,371E	542,199	2,562,570
1989	650,488	203,620	854,108	1,984,634E	532,663	2,517,297
1990	669,643	209,252	878,895	1,997,934E	530,525E	2,528,459
1991	718,416	214,663	933,079	1,994,030E	508,289E	2,502,319
1992	645,860	222,635	868,495	1,900,000E	500,000E	2,400,000

Sources: *Lloyd's Register of Shipping Statistical Tables,* Lloyd's Register of Shipping, London, UK, various years (high-seas fleet only); *Fishery Fleet Statistics,* Bulletin of Fishery Statistics, Food and Agriculture Organization of the United Nations, Rome, various years; *Annual Report on German Fisheries*, Federal Ministry of Food, Agriculture and Forestry, Bonn, various years; *Årsberetning vedkommende Norges Fiskerier*, Fiskeridirecctoratet, Fiskeflåten, various issues, *L'évolution du secteur belge de la pêche maritime*, Conseil Central de l'Economie, Commission Consultative Spéciale de la Pêche, Bruxelles, various years; *Sea Fisheries Statistical Tables,* Government Statistical Service, London, various years. (E) = Estimate.

[d] Greece joined the EC on January 1, 1981.

[e] Portugal and Spain joined the EC on January 1, 1986.

II. APPENDICES

D. Graphs

Figure 1.--World fishery catch, 1970-1992.

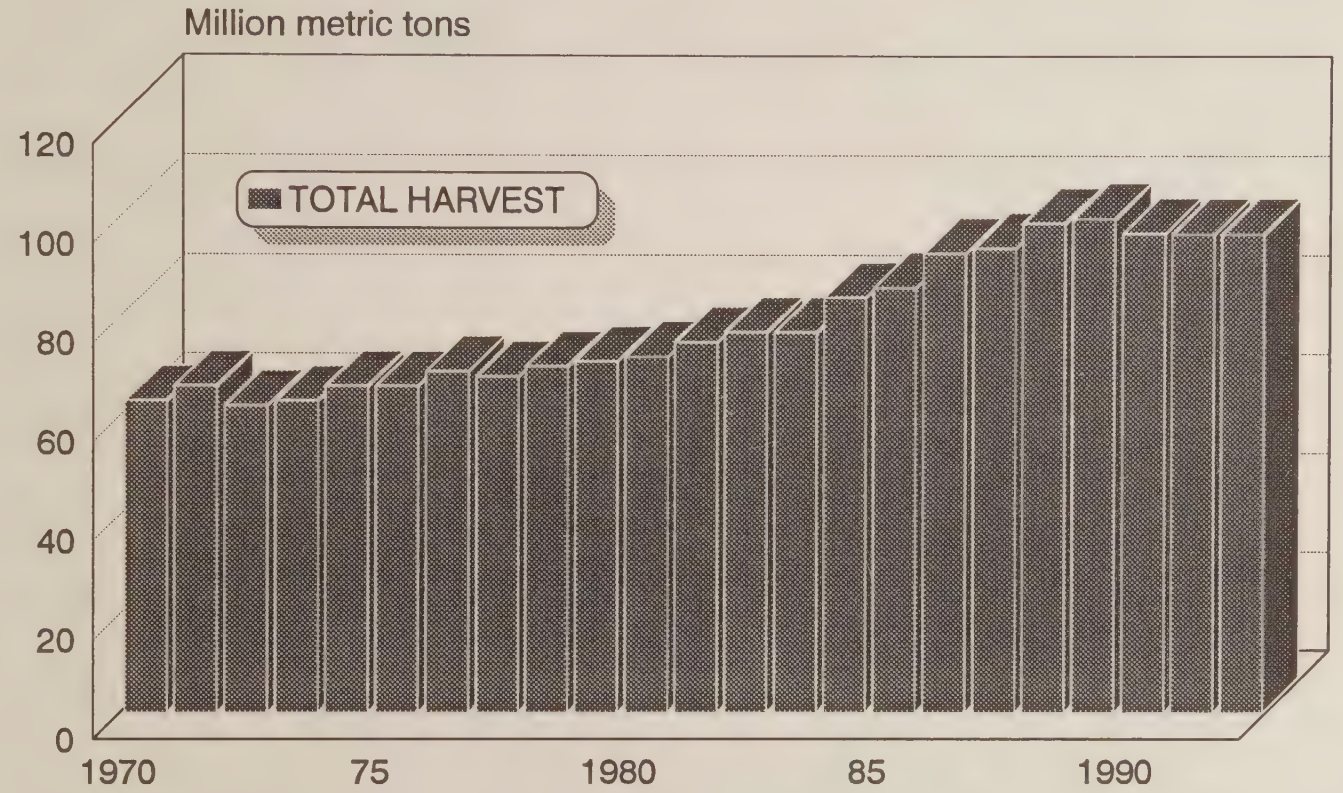

Figure 2.--Latin American countries have significantly expanded the number of large fishing vessels in their fleets.

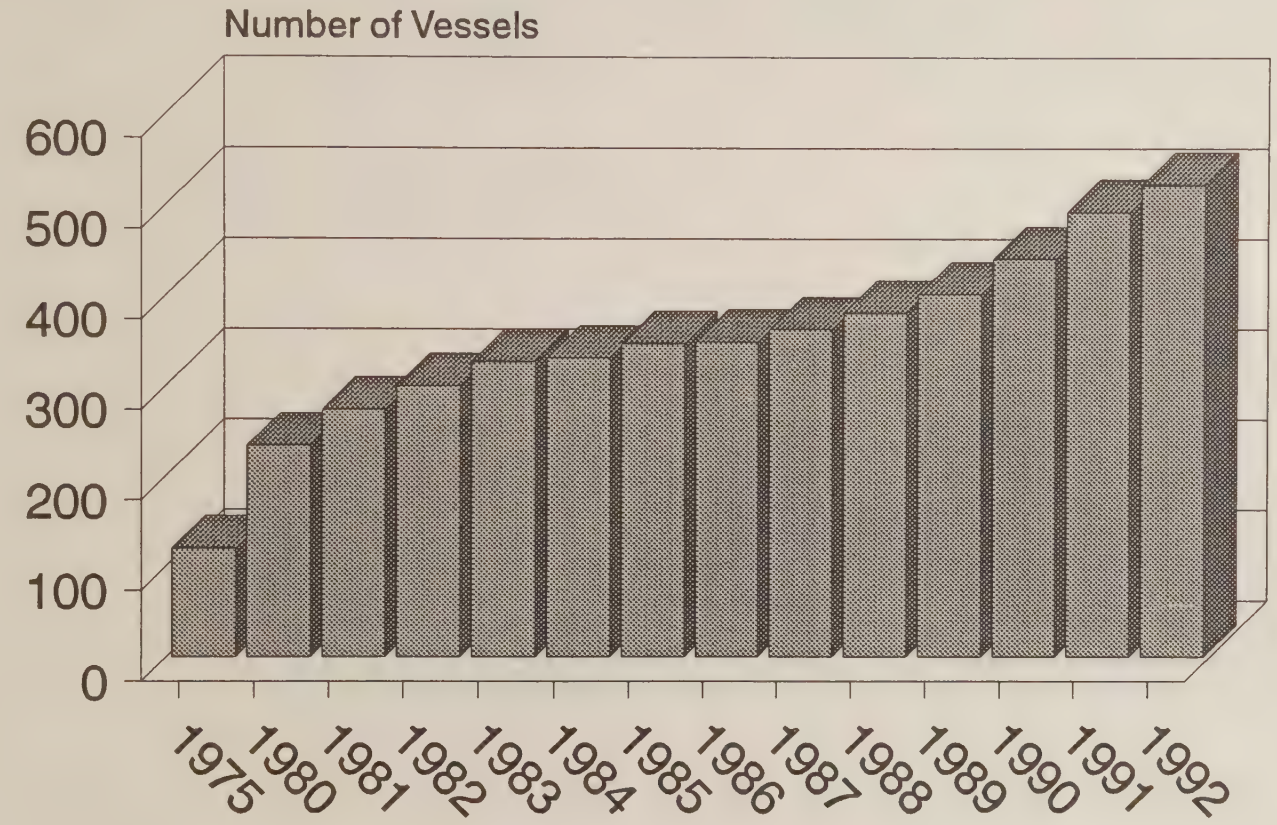

Figure 3.--Foreign fishing in the southwest Atlantic increased during the early 1980s and did not level off until the British began managing the Falkland grounds.

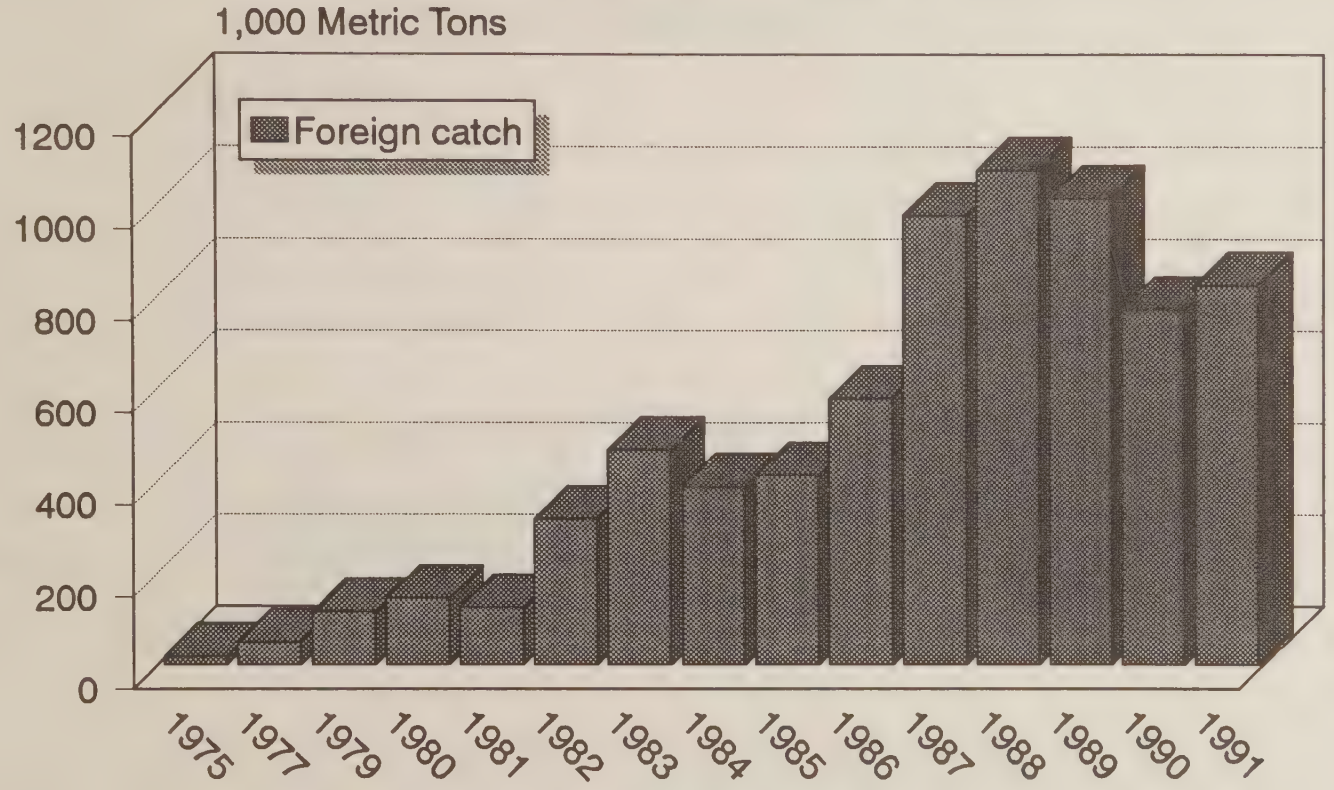

Figure 4--Foreign fishing off Latin American increased significantly in the 1980s, primarily because of the expansion of Soviet effort. The withdrawal of the Soviet fleet in 1991-92 has sharply reduced the distant-water catch.

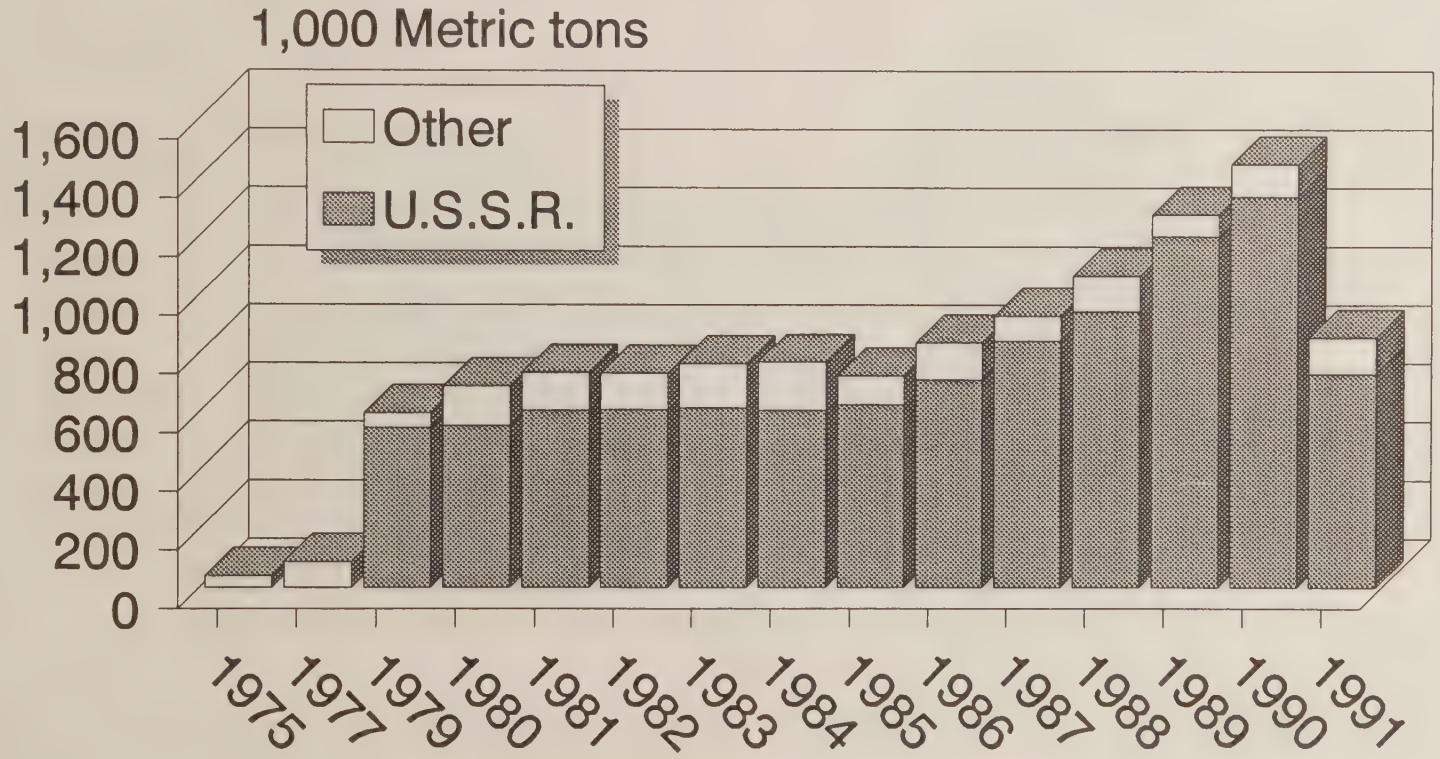

Figure 5.--West European high-seas fishing fleet, by number of vessels and tonnage, 1975-92.

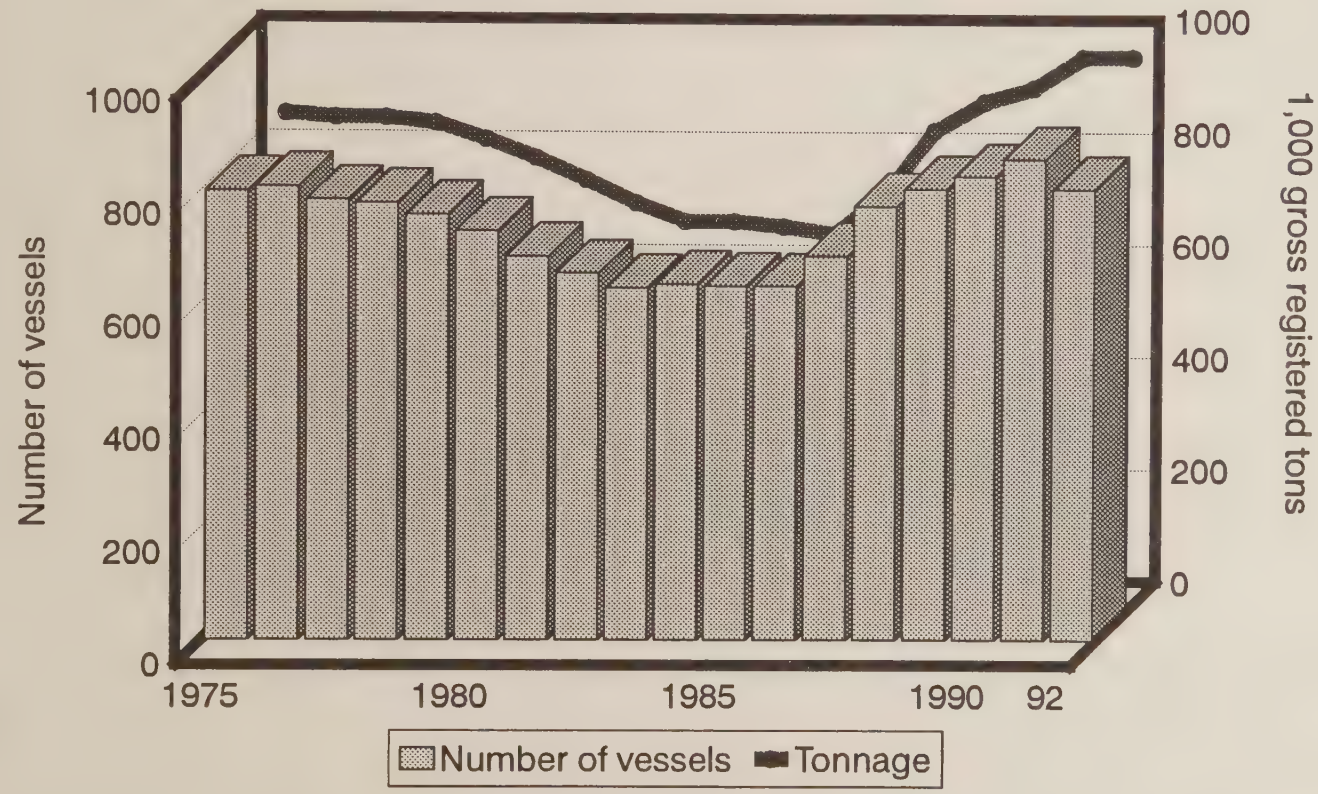

Figure 6.--Asia. Distant-water fleet catch, 1991